IEEE Transactions on Medical Imaging
Special Issue on Geometric Deep Learning in Medical Imaging

Unlike convolutional neural networks (CNNs) that are inherently limited to 2D/3D grid-structured data, geometric deep learning (GDL) is capable of handling non-Euclidean data (i.e., graphs and manifolds) and is hence well-suited for medical imaging data, structure-function connectivity networks, imaging genetics and omics data, and spatiotemporal anatomical representations. However, despite recent advances in GDL research, questions remain on how best to learn representations of non-Euclidean data; how to convolve effectively on graphs; how to perform graph pooling/unpooling; how to handle heterogeneous data; and how to improve the interpretability of GDL.

This special issue focuses on state-of-the-art GDL techniques and their applications in medical imaging. We seek contributions that include, but are not limited to:

- Theoretical underpinnings of GDL problems arising in medical imaging
- Novel applications of GDL in medical imaging acquisition, reconstruction, and analysis
- Un/semi/weakly-supervised learning for GDL; Annotation efficient approaches to GDL
- Domain adaptation, transfer learning and adversarial learning in medical imaging with GDL
- Multi-modal medical imaging data fusion and integration with GDL
- Joint latent space learning with GDL for medical imaging and non-imaging data integration
- Spatiotemporal medical imaging and image analysis using GDL
- GDL approaches for medical image registration, super-resolution, and resampling
- Accelerated medical imaging acquisition/reconstruction with non-Cartesian sampling using GDL
- Graphical processor architectures for medical imaging and medical image computing
- Novel datasets, challenges, and benchmarks for application and evaluation of GDL

Authors must submit papers on ScholarOne according to the instruction here. **Please choose "Special Issue on Geometric Deep Learning in Medical Imaging" as the *manuscript type* in the submission process.** Four reviewers will be typically recruited according to the standard TMI review protocol. Authors are encouraged to discuss with one of the guest editors to determine suitability for this special issue.

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Key Dates:

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